

REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application. Claims 1 and 3-22 are currently pending in this application. Claims 3 and 4 have been withdrawn from further consideration. No new matter has been added by way of the present amendment. For instance, the amendments to claims 1 and 21 find support at, for example, page 8, lines 18-22 of the present Specification. Accordingly, no new matter has been added.

In view of the amendments and remarks herein, Applicants respectfully request that the Examiner withdraw all outstanding rejections and allow the currently pending claims.

Claim Objections

The Examiner objects to claim 21, and asserts that the phrase “wherein the ion exchange resins are produced...” should instead recite “wherein the crosslinked ion exchange resins are produced,” so as to avoid antecedent basis issues. Applicants respectfully traverse.

Claim 21 has been amended to correct the issues identified by the Examiner. Accordingly, this objection is moot.

Reconsideration and withdrawal of this objection are thus respectfully requested.

Issues Under 35 U.S.C. § 103(a)

Claims 1, 5-14 and 17-22

Claims 1, 5-14 and 17-22 stand rejected under 35 U.S.C. §103(a) as being obvious over Fenton et al. (U.S. 6,456,136) (hereinafter Fenton ‘136). Applicants respectfully traverse.

The Examiner asserts that Fenton '136 discloses a composite membrane structure comprising a composite membrane and at least one protective layer disposed adjacent to the composite membrane, wherein the composite membrane is a porous polymeric matrix and wherein an ionically conductive solid, noble metal or combination thereof is dispersed in the matrix.

The Examiner acknowledges that Fenton '136 fails to teach an inorganic filler that is lamellar in shape or has the claimed aspect ratio. However, the Examiner asserts that "where the only difference between the prior art and the claimed invention was a recitation of relative dimensions...and a device having the claimed dimensions would not perform differently than the prior art device, the claimed device [is] not patentably distinct from the prior art device."

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Additionally, there must be a reason why one of ordinary skill in the art would modify the reference or combine reference teachings to obtain the invention. A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). There must be a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* The Supreme Court of the United States has recently held that the "teaching, suggestion, motivation test" is a valid test for obviousness, albeit one which cannot be too rigidly applied. *Id.* Rejections on obviousness grounds cannot be sustained by mere

conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *Id.*

The present claims have been amended to more clearly recite the inventive features of the present invention. As amended, the present claims require an ion exchange membrane comprising a porous film layer and a surface layer, wherein the pores of the porous film are filled with a crosslinked ion exchange resin and the surface layer comprises a crosslinked ion exchange resin and a lamellar particle (see, e.g., claims 1 and 21). The present claims further require that the porous film layer comprises a polyolefin resin porous oriented film (see, e.g., claims 1 and 21). Moreover, the present claims require that the surface layer comprises an inorganic filler having an average primary particle longest diameter which is 0.1 times or more the average pore diameter of the pores of the porous film layer/polyolefin resin porous oriented film, and 50 μm or less (see, e.g., claims 1 and 21). Applicants submit that the prior art of record fails to teach or suggest an ion exchange membrane as presently claimed.

For instance, the Examiner's attention is respectfully directed to col. 4, lines 42-54 of Fenton '136, where this reference discloses materials suitable for use as matrices in the membrane of its invention. Specifically, Fenton '136 discloses the use of PTFE, PVDF, PEEK, PES, PFA, FEP, polybenzimidazole, sulfonated polyetheretherketone, poly(phenylene oxide), sulfonated poly(phenylene oxide), polyaniline, polystyrene oxide, poly(methacrylate) and copolymers and mixtures thereof. However, Fenton '136 does not teach or suggest the use of a polyolefin resin porous oriented film, as presently claimed.

Moreover, as acknowledged by the Examiner, Fenton '136 fails to teach or suggest a surface layer comprising an inorganic filler having an average primary particle longest diameter

which is 0.1 times or more the average pore diameter of the pores of the porous film layer/polyolefin resin porous oriented film, and 50 μm or less.

Evidently, Fenton '136 fails to teach or suggest an ion exchange membrane as presently claimed. Reconsideration and withdrawal of this rejection are thus respectfully requested.

Claims 15-16

Claims 15-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fenton '136 in view of Roark et al. (U.S. 7,001,446) (hereinafter Roark '446). Applicants respectfully traverse.

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. As previously discussed, Fenton '136 fails to teach or suggest an ion exchange membrane as presently claimed. Roark '446 fails to cure these deficiencies.

Roark '446 is directed to a hydrogen-permeable membrane for separation of hydrogen from hydrogen-containing gases. Roark '446 does not disclose or suggest the inventive ion exchange membrane of the present application.

Evidently, the cited references, alone or in combination, fail to teach or suggest every limitation of the instant invention. For this reason alone, this rejection should be withdrawn.

Furthermore, assuming *arguendo* that Roark '446 cured the deficiencies of Fenton '136, it is noted that references cannot be arbitrarily combined. There must be some reason why one of ordinary skill in the art would be motivated to make the proposed combination of the primary and secondary references. *KSR Int'l Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). Courts have clearly established that, even when a combination of references teaches every element of a

claimed invention, a rejection based on a *prima facie* case of obviousness is improper absent a motivation to combine. *Id.*

Fenton '136 is directed to porous membranes, whereas Roark '446 is directed to a non-porous multi-layer membrane. One skilled in the art would not have been motivated to modify the porous layers of Fenton '136 by using the materials disclosed by Roark '446 for non-porous membranes.

Because the invention, as set forth in Applicants' claims, is not disclosed or made obvious by the cited prior art, reconsideration and withdrawal of this rejection are respectfully requested.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and objections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Vanessa Perez-Ramos, Reg. No. 61,158, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

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